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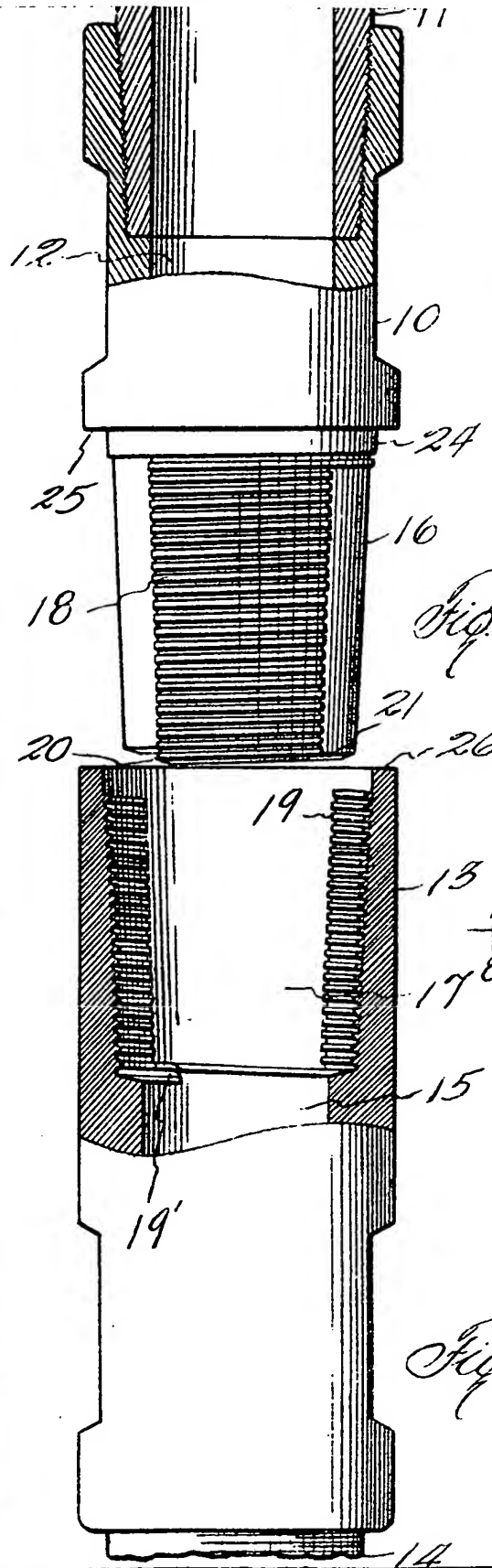


Fig. 1.

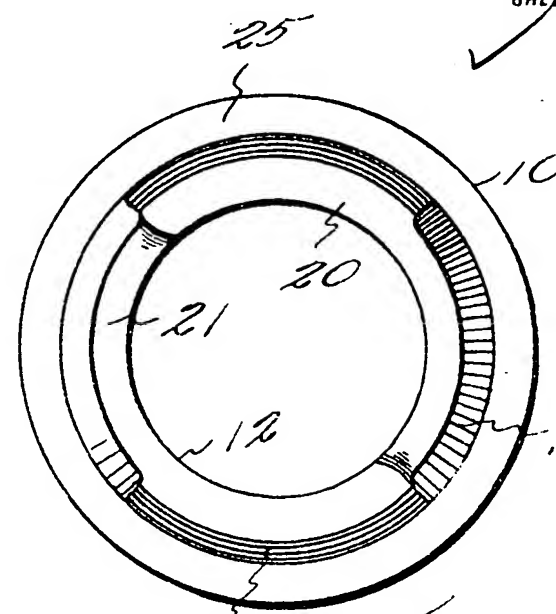


Fig. 3.

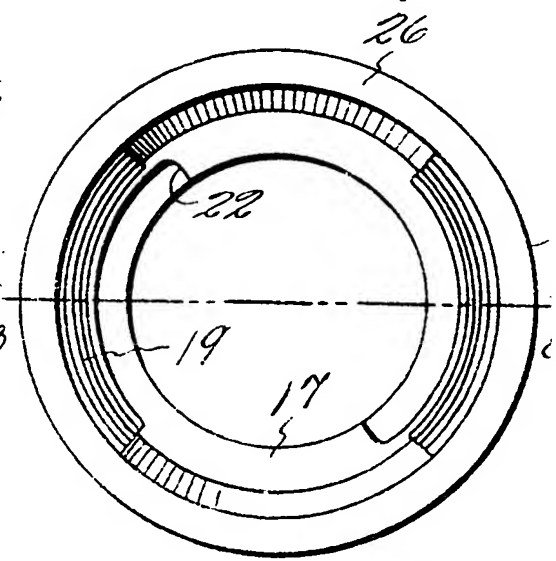
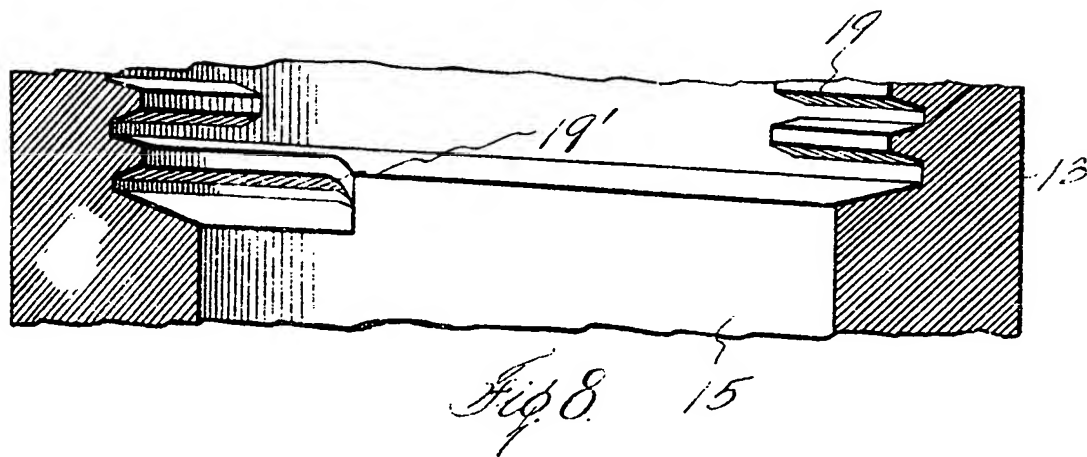
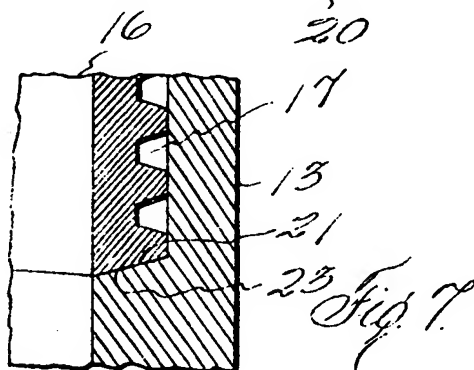
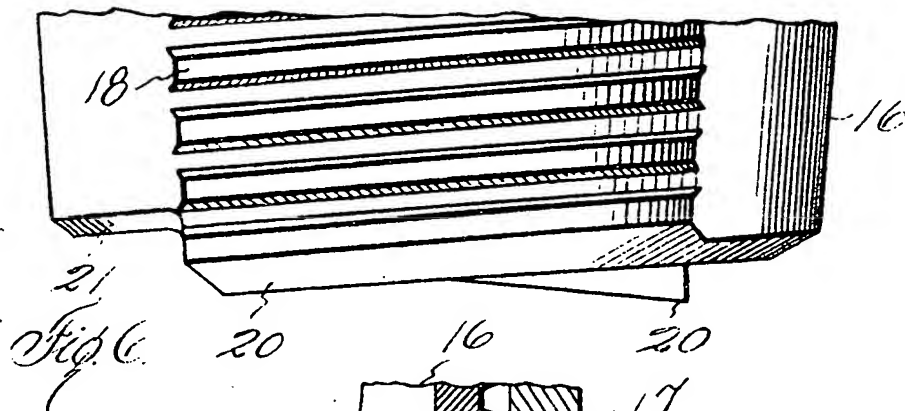
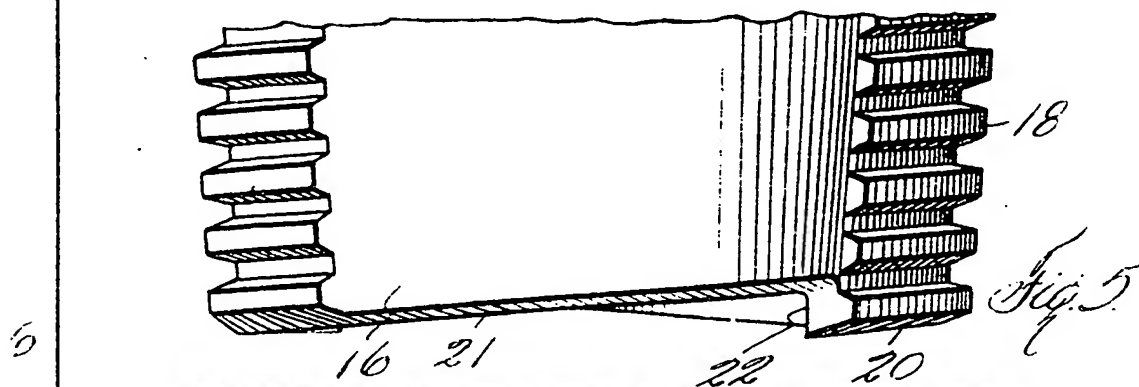


Fig. 4.

Fig. 2.



Dec 52  
for 51

# PATENT SPECIFICATION



Application Date: March 9, 1925.

No. 6388/25.

242,501

Complete Accepted: Nov. 12, 1925.

## COMPLETE SPECIFICATION.

### Improvements in Couplings for Tubular Rods.

I, ROBERT ALEXANDER WILSON, Mechanical Engineer, of Box 1106, Dallas, State of Texas, United States of America, a citizen of the United States of America, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

10 This invention relates to new and useful improvements in couplings for tubular rods.

In the coupling for tubular rods, according to the present invention, a tapered pin forming a part of the male portion of the coupling has mutilated threads in longitudinal panels on diametrically opposite sides. The counter bore of the box or female part of the coupling has mutilated threads in spaced vertical panels meshing with the threads of the pin, and this counter bore also is provided with seats at the bottom between the panels for receiving shoes on the lower end of the tapered pin. The under faces of the shoes and the surfaces of the seats conform to the pitch of the thread and are extensions of the same. The shoes extend radially the full thickness of the wall of the pin, but the seats on the counter bore are deeper than the threads.

By means of this invention the thread structure and component parts are so amplified that when the tapered pin is dropped into the box, the impact and load will be sustained, borne and distributed over wide surfaces of substantial areas and not merely upon the thread alone.

The invention also provides amplified convolute extensions on the lower edge or bottom of the pin to sustain the impact and load when the pin is dropped into the box.

[Price 1/-]

Fig. 1 is an elevation of the pin member of a joint constructed in accordance with my invention.

Fig. 2 is a view of a box constructed in accordance with my invention, a portion being shown in elevation and a portion in section.

Fig. 3 is an underside view of the pin member.

Fig. 4 is a plan view of the box.

Fig. 5 is an enlarged elevation of the improved pin.

Fig. 6 is a similar view at right angles to Fig. 5.

Fig. 7 is an enlarged vertical sectional view showing one of the shoes or extensions resting on the thread seat at the bottom of the well of the box, prior to the meshing of the threads, and

Fig. 8 is a vertical sectional view taken on the line 8—8 of Fig. 4.

In the drawings the numeral 10 designates a pin member which has a screw threaded socket at its upper end to receive the usual screw threaded well tubing, stem, pipe or other tubular conductor 11, with which the joint is used. The member 10 has a longitudinal bore 12.

The pin member 10 constitutes one portion or element of the joint; while a box member 13 constitutes the other element or portion. The lower end of the box is screw threaded to receive the complementary portion 14 of the tubing or other conductor 11. The box has an axial bore 15. The member 10 and box 13 are screwed onto the tubular element 11 and 14 in the usual manner; it being a common practice to make the threads comparatively fine and to taper the parts. This structure may vary according to the use and the particular conductors which are to be coupled. It is the intention to screw the member 10 and the box 13 onto the parts 11 and 14 in such a manner

that they will remain so connected when the joint is unscrewed or broken.

The member 10 is provided with a depending tapered pin 16, and the box 13 is formed with a countersunk tapering well 17 for receiving said pin.

The pin is provided with mutilated threads 18 arranged in two panels each occupying substantially one quarter of the circumference of the pin and disposed diametrically opposite each other. This provides gaps between the panels. The panels are formed of coarse threads, in convolutions of which are preferably, spaced sufficiently to admit the forming of a second thread of the same pitch, intermediate said convolutions. The second thread is started diametrically opposite from the first thread. From the foregoing it will be seen that one of the threads begins at the lower end of one panel; while the other thread begins at the lower end of the diametrically opposite panel. By this arrangement ample thread bearing is had and a coarse thread is available. It is within the scope of the invention to utilize a single thread.

The well 17 is provided with double threads 19 which are mutilated and formed into diametrically opposite panels having substantially the same width as the gaps between the panels of the pin, so that the pin may be inserted in the well 17 its threads 18 received in the gaps of the well. The members are coupled by rotating the pin member 10 to mesh the threads.

The very important feature of the invention is the provision of a pair of shoes or extensions 20 on the lower or bottom edge of the pin. These shoes extend radially the full thickness of the wall of the pin and conform to the convolutions of the threads, the lower-most threads 19 being formed on the outer peripheries of the shoes. The edges 21 between the shoes are cut back on the same pitch as the opposite thread of the following panel. This causes the entrant end of the shoe to drop off by a shoulder 22. The under sides or faces of the shoes have the same bevel as the threads and with the edges 21, become in effect, amplified threads.

To receive and support the shoes at the bottom of the gaps between the threads 19 of well 17 convolute seats or shoulders 23 are formed contiguous to the threads 19. Each lower thread 19 has a short extension 19<sup>1</sup> which connects with the seat leading into the next panel. Each seat extends convolutely under the panel in its forward path. The seats

have the same pitch and bevel as the threads and shoes. 65

When the pin is inserted in the box the shoes will engage upon the seats 23 and thread extensions 19<sup>1</sup>. The broad faces of the shoes engaging the wide seats of the boxes will take the impact and sustain the load which would otherwise be imposed upon the threads. In order to mesh the threads 18 and 19 without lifting the pin after it is inserted and simply by rotating, guides at the lower ends of the gaps in the well 17 must be provided. If merely thread extensions or thread convolutions are used, then they must sustain the impact and load. But by the use of the shoes 20 and the seats 23, having the same pitch as the threads, it is obvious that when the pin is rotated its thread 18 will be guided into the threads 19 in a free and easy manner. 70 75 80 85

The coupling is tightened by a quarter rotation of the member 10. At the upper end of the pin, an annular collar 24 is formed to fit snugly in the upper end of the well above the threads 19 thereof. An annular radial shoulder 25 overhands the collar 24 and the parts are so proportioned that as the threads are meshed by the rotation of the member 10, the shoulder will frictionally engage the upper flat edge 26 of the box. As the coupling is tightened the frictional contact between the parts 25 and 26 will be increased, whereby the box and pin members will be adequately fastened together. Tests have demonstrated that the members will not unscrew when a drill pipe is rotated in a reverse direction in a well and a wrench is required to uncouple the joint. However the members are coupled or uncoupled by a quarter of a rotation. 90 95 100 105

Owing to the use of mutilated threads it is not necessary to give as much taper to the pin 16 as where continuous thread coupling for a two inch pipe can only be given an inch and one-eighth bore. It will be apparent that this coupling may be used in various places where it is desired to unit two pipes or tubular conductors. 110 115

Various other changes, alterations and modifications may be made within the scope of the appended claims.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:— 120

1. A coupling for tubular rods and the like, having a male portion carrying a tapered pin and a female portion having a tapered counterbore adapted to receive 125

the taper pin, wherein the taper pin has mutilated threads arranged thereon in longitudinal panels on diametrically opposite sides thereof and shoes on the  
5 lower end thereof, and the counterbore is provided with mutilated threads arranged in spaced vertical panels to mesh with the threads of the tapered pin and with seats at the bottom of the  
10 counterbore between the thread panels thereof for receiving the shoes, when the pin is inserted in the counterbore.

2. A coupling as set forth in Claim 1, wherein the underfaces of the shoes and  
15 the surfaces of the seats conform to the

pitch of the thread and are in fact extensions thereof.

3. A coupling as set forth in Claim 1, wherein the shoes carry the lowermost of the threads of the panels of the pin and  
20 extend radially the full thickness of the wall of the pin and wherein the seats are deeper than the threads.

4. A coupling tubular conductors and the like, substantially as shown and  
25 described and for the purpose set forth.

Dated this 9th day of March, 1925.

WHEATLEY & MACKENZIE,  
40, Chancery Lane, London, W.C. 2,  
Agents.

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